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Observations and Elements of Comet b 1881.

By J. Tebbutt, Esq.

By a previous mail I sent to Europe my report of the appearance of a comet, and I have now the honour to supplement it by my observations and an approximate determination of the orbit. The following positions, with the exception of that for June 11, were obtained with the filar micrometer of the 4½-inch Equatoreal, the differential measures being all corrected for refraction. The corrections for parallax may be obtained by means of the log. factors $\frac{p}{P}$, $\frac{q}{P}$, p and q denoting the corrections in time and arc respectively, and P the comet's equatoreal horizontal parallax in arc. When the comet was first detected no tail could be distinguished without optical aid. Traces of a tail were, however, seen without a telescope on the following evening, and on the 25th it was about two degrees in length. Measures on the evening of June 1 gave 8½ degrees as the length of the appendage, but increasing moonlight prevented its being seen to advantage. The nucleus was brilliant and well defined in the telescope. The comparisons with Lacaille 1685 were not good, owing to the proximity of the objects to the horizon. Those of June 4 were also unsatisfactory, and on the morning of the 12th the comet was only compared in the twilight with *Rigel* by means of the circles of the Equatoreal.

	Windsor Mean Time 1881.	App. R.A. of Comet	Log. Factor for Parallax $\frac{p}{P}$	App. N.P.D. of Comet	Log. Factor for Parallax $\frac{q}{P}$	No. of Cp.	Cp. St.
	h m s	h m s		° ′ ″			
May 22,	6 56 24	4 58 20·90	+8·8351	125 39 54·9	+9·6475	8	1
23,	7 1 17	4 58 52·38	+8·8326	125 13 45 0	+9 6666	7	2
23,	7 35 26			125 13 2·8	+9·7287	3	3
23,	7 39 19	4 58 52·60	+8·8243			2	3
25,	7 3 37	4 59 48·23	+8·8264	124 13 16·7	+9·6886	7	4
27,	18 9 44	5 1 3·46	−8·8166	122 45 53·7	+9·7163	1	5
June 1,	6 22 4	5 3 27·15	+8·8034	119 5 16·5	+9·6795	12	6
2,	6 42 37	5 4 2·86	+8·7970	118 0 55·7	+9·7195	1	7
4,	6 46 24	5 5 13·65	+8·7851	115 32 55·9	+9·7387	3	8
5,	6 25 42	5 5 53·74	+8·7835	114 7 40·5	+9·7216	5	9
6,	6 14 30	5 6 33·29	+8·7792	112 32 31·3	+9·7149	5	10
6,	6 14 30	5 6 33·22	+8·7792			5	11
8,	6 12 59	5 8 0·91	+8·7680	108 46 24·4	+9·7288	5	12
11,	18 27 36	5 11 8·08	−8·7454	99 47 52·1	+9·7154	3	13

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Adopted Mean Places of the Comparison Stars for 1881·0, *and Apparent Places for the Dates of Observation.*

Comp. Star.	R.A. Mean.	R.A. App.	N.P.D. Mean.	N.P.D. App.	Authority for Star's Mean Place.
	h m s	s	° ′ ″		
1	5 0 7·62	7·50	125 38 49·1	52·9	$\frac{\textit{Wash. Gen. Cat.}\ 1860 + \textit{Wash. Obs.}\ 1875 + \textit{Cape Cat.}\ 1860}{3}$
2	5 2 8·52	8·42	125 11 42·9	46·6	*Lacaille's Cat.* 1750, No. 1722
3	4 56 34·32	34·22	125 11 5·9	9·0	,, ,, No. 1685
4	4 55 40·27	40·20	124 20 16 6	19·0	,, ,, No. 1681
5	5 11 58·40	58·42	122 38 39·0	42·5	,, ,, No. 1785
6	5 2 58·53	58·70	119 8 1·0	2·3	*Wash. Gen. Cat.* 1860, No. 2173
7	5 32 34·62	34·86	117 56 28 9	33·1	,, ,, No. 2342
8	5 11 43·63	43·95	115 27 51·0	52·5	,, ,, No. 2217
9	5 8 9·50	9·87	114 6 21·0	21·9	*Wash. Mural Cir. Zones*, 156, 1848, No. 11
10	5 0 25·36	25·80	112 31 56·0	55·7	*Nautical Almanac*, 1881
11	5 4 42·20	42·63			*Ann. de l'Obs. Roy. de Bruxelles Cat.* 1874, No. 116
12	5 8 12·07	12·63	108 41 50·4	50·7	*Oeltzen Argelander, Sud.* No. 3773
13	5 8 49·11	49·97	98 20 26·1	25·9	*Nautical Almanac*, 1881

In bringing up the places of the stars the proper motion has been taken, where possible, from the B.A. Catalogue. It will be necessary to re-determine the places of Lacaille's stars in the meridian at the close of the year.

From the comet's positions for May 22, June 1 and 11, uncorrected for Aberration and Parallax, I have deduced the following parabola:—

Perihelion passage, 1881, June 16·30995, Greenwich Mean Time.

Longitude of the perihelion	...	264° 56′ 16″ M. Eq. 1881·0
Longitude of the ascending node	...	270° 54′ 0″ „
Inclination of the orbit ...	...	63° 27′ 14″
Perihelion distance	...	0·7357075
Motion	...	Direct.

These elements resemble those of the Great Comet of 1807, and were it not that Bessel assigned the long period of 1714 years to that comet, I should regard the late visitor as identical with it. At the time of the comet's nodal passage the Earth was at no great distance from the prolongation of the axis of the comet's tail, and it will be seen that the comet's orbit approached very near to that of the planet *Venus*.

Observatory, Windsor, N. S. Wales:
1881, *August* 10.

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